半导体物理性能手册

第 3 卷 （下册）

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HANDBOOK ON PHYSICAL PROPERTIES OF SEMICONDUCTORS

Volume 3
II–VI Compound Semiconductors

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哈爾濱工業大學出版社
HARBIN INSTITUTE OF TECHNOLOGY PRESS

黑版贸审字08-2014-012号

图书在版编目（CIP）数据

半导体物理性能手册. 第3卷. 下册：英文/（日）足立贞夫主编. —哈尔滨：哈尔滨工业大学出版社，2014.4
（Springer手册精选原版系列）
ISBN 978-7-5603-4519-2

Ⅰ.①半… Ⅱ.①足… Ⅲ.①半导体材料-物理性能-手册-英文 Ⅳ.①TN304-62

中国版本图书馆CIP数据核字（2013）第297003号

材料科学与工程
图书工作室

责任编辑 许雅莹 张秀华 杨 桦
出版发行 哈尔滨工业大学出版社
社 址 哈尔滨市南岗区复华四道街10号 邮编 150006
传 真 0451-86414749
网 址 http://hitpress.hit.edu.cn
印 刷 哈尔滨市石桥印务有限公司
开 本 787mm × 1092mm 1/16 印张 15.25
版 次 2014年4月第1版 2014年4月第1次印刷
书 号 ISBN 978-7-5603-4519-2
定 价 138.00元

PREFACE

The progress made in physics and technology of semiconductors depends mainly on three families of materials: the group-IV elemental, III–V, and II–VI compound semiconductors. Almost all II–VI compound semiconductors crystallize either in the zincblende or wurtzite structure. The first research papers on II–VI compound semiconductors date back to the middle of the nineteenth century. In the ensuring hundred years extensive literature has been accumulated as much research and development works are being carried out on these compound semiconductors. At present, the II–VI compound semiconductors are widely used as photodetectors, x-ray sensors and scintillators, phosphors in lighting, displays, etc. New applications are continuously being proposed. Thus, it seems to timely bring together the most up-to-date information on the material and semiconducting properties of II–VI compound semiconductors.

The aim throughout has been to present in convenient form as large amount of accurate, reliable, and up-to-date information on the physical properties of II-VI compound semiconductors for a variety of basic research and device applications. The data on the physical properties of each semiconductor are organized in the same way in order to facilitate searching for information. The physical properties considered in this book can be classified into 12 groups: (1) structural properties; (2) thermal properties; (3) elastic properties; (4) phonons and lattice vibronic properties; (5) collective effects and related properties; (6) energy-band structure:

energy-band gaps; (7) energy-band structure: electron and hole effective mass; (8) electronic deformation potential; (9) electron affinity and Schottky barrier height; (10) optical properties; (11) elastooptic, electrooptic, and nonlinear optical properties; and (12) carrier transport properties.

The extensive bibliography is included for those who wish to find additional information if required. I hope that the book will aid many who want to know various properties of those semiconductor materials in the course of their work. The reader will also find the series books "Group-IV Semiconductors" and "III–V Compound Semiconductors" useful in order to find the needed information quickly on these practically important semiconductors.

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